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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,711	02/14/2001	David Michael Stuttard	9404.17372	2194

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EXAMINER

FUREMAN, JARED

ART UNIT	PAPER NUMBER
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2876

DATE MAILED: 07/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/783,711

Applicant(s)

STUTTARD, DAVID MICHAEL

Examiner

Jared J. Fureman

Art Unit

2876

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 7, 10-12 and 15-19 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 8, 9, 13 and 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5, 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Receipt is acknowledged of the IDS filed on 7/25/2001 and the IDS filed on 11/29/2001. Two references were lined through on the IDS filed on 11/29/2001, since they had been previously cited on the IDS filed 7/25/2002. Claims 1-19 are pending.

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in the United Kingdom on 2/8/2001. It is noted, however, that applicant has not filed a certified copy of the UK 0103089.9 application as required by 35 U.S.C. 119(b).

Specification

2. The disclosure is objected to because of the following informalities: The specification does not contain headings. Headings (such as: BACKGROUND OF THE INVENTION, SUMMARY OF THE INVENTION, BRIEF DESCRIPTION OF THE DRAWINGS, DETAILED DESCRIPTION) should be added to the specification.

Appropriate correction is required.

Claim Objections

3. Claim 13 is objected to because of the following informalities:

Claim 13:

Line 2, "of" should be replaced with --having a--, and --a radius of-- should be inserted after "than", in order to clarify the claim.

Line 3, --a radius of-- should be inserted after "than", in order to clarify the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3, 6, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito (US 4,700,079).

Ito teaches a gas sensor comprising: an optical source (1) for emitting radiation therefrom, a detector (5) sensitive to radiation emitted from the source, a circumferential chamber (4) having optically reflective surfaces (the block 3 and groove 4 is coated with a bright metal film 15) extending between the source and the detector, the chamber is defined by outer and inner circumferential walls of a substantially cylindrical housing (3), a first end wall (as shown in figure 2, there is a wall behind the light-emitting element 1 which extends between the outer and inner circumferential walls of the groove 4) extending radially between the outer and inner circumferential walls to define a first end of the chamber, the source is located adjacent the first end wall, and a method of

forming a gas sensor comprising the steps of providing an optical source (1) for emitting radiation therefrom and a detector (5) sensitive to radiation emitted from the source at opposite ends of a circumferential chamber (4) extending around the periphery of a sensor housing (3) and having optically reflective surfaces (15) along the length thereof (see figures 1, 2, column 2 line 25 - column 3 line 11).

8. Claims 15 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Wong (US 5,060,508).

Wong teaches a gas sensor comprising: an optical source (12) for emitting radiation therefrom, a detector (26) sensitive to radiation emitted from the source, a chamber (20) extending between the source and the detector defined by a plurality of non-focusing planar surfaces (the side walls of the passage 20 are planar surfaces) disposed to form a folded optical pathway that includes a plurality of segments substantially parallel to one another (as can be seen in figures 1, 2, and 4, the passage 20 includes a plurality of segments substantially parallel to one another) (see figures 1, 2, 4, column 3 lines 10-18, 27-45, column 3 line 59 - column 4 line 26), a chamber cover (second half 52) forming a top closure for the chamber, including a reflective inner surface (the groove 60 in the second half is coated with a thin metallic layer to provide reflectivity, see column 4, lines 20-26) in combination with a gas permeable member (the second half, as well as the first half, includes passages extending from the passage 20 to the outside of the sensor, thus making the second halves gas permeable, see column 3 lines 40-45).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ito in view of Russell et al (US 4,810,096).

The teachings of Ito have been discussed above.

Ito fails to teach the detector being located adjacent the first end wall.

Russell et al teaches that, in an optical detection system, the location/mounting of an optical source and detector can be reversed (see column 4 lines 12-22).

In view of Russell et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the sensor, as taught by Ito, to include the detector being located adjacent the first end wall, since the position of the optical source and detector can be reversed without providing any unexpected results.

11. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito in view of Wong.

The teachings of Ito have been discussed above.

Ito fails to teach a chamber cover forming a closure for the cylindrical housing, the chamber cover including a reflective inner surface in combination with a gas permeable member, the gas permeable member covering an annular portion of the circumferential chamber.

Wong teaches a gas sensor including a cover (52) forming a closure, the chamber cover including a reflective inner surface (the groove 60 of the second half 52 is coated with a thin metallic layer) in combination with a gas permeable member (the second half 52 includes passages), the gas permeable member covering an annular portion of the circumferential chamber (the second half covers the curved portions of the grooves 58 and 60, see figures 1, 2, 4, column 3 lines 10-18, 27-45, column 3 line 59 - column 4 line 26).

In view of Wong's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the sensor as taught by Ito, a chamber cover forming a closure for the cylindrical housing, the chamber cover including a reflective inner surface in combination with a gas permeable member, the gas permeable member covering an annular portion of the circumferential chamber, in order to provide a semi-enclosed chamber thereby preventing dispersion of the light emitted by the optical source.

12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ito as modified by Wong as applied to claim 10 above, and further in view of Crowder (US 4,560,875).

Ito as modified by Wong fails to teach the gas permeable member comprising a flame arresting material.

Crowder teaches a gas sensor having a housing that is constructed to comply with flame and explosion proof safety standards (see column 6 lines 42-56).

In view of Crowder's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the sensor as taught by Ito as modified by Wong, the gas permeable member comprising a flame arresting material, in order to provide a gas sensor which may be used in flammable/explosive environments.

13. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Crowder.

The teachings of Wong have been discussed above.

Wong fails to teach the gas permeable member comprising a flame arresting material.

The teachings of Crowder have been discussed above.

In view of Crowder's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the sensor as taught by Wong, the gas permeable member comprising a flame arresting material, in order to provide a gas sensor which may be used in flammable/explosive environments.

Allowable Subject Matter

14. Claims 4, 5, 8, 9, 13, and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims (note the objections to claim 13, above).

15. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record, taken alone or in combination, fails to teach or fairly suggest: the gas sensor including a second end wall, extending generally radially

between the outer and inner circumferential walls and at an oblique angle to a tangent of the outer or inner circumferential walls, to reflect light through a gap in the inner circumferential wall into a central chamber, the optical pathway between source and detector thereby comprising a substantially circumferential portion and a radial portion, and the gas permeable member comprising a disc having a radius greater than a radius of the inner circumferential wall and less than a radius of the outer circumferential wall, in combination with the other claimed elements as set forth in the claims.

Ito teaches the source (1) and the detector (5) being located at the beginning and end, respectively, of the chamber (4), and does not require a second end wall to reflect light to the detector. Thus, there is no motivation (other than applicants) to modify the sensor as taught by Ito to include a second end wall to reflect light through a gap in the inner circumferential wall into a central chamber, as set forth in the claims.

The cover/gas permeable member (second half 52) as taught by Wong has the same dimensions as the base (first half 50), thus, there is no motivation (other than applicants) to provide a gas permeable member comprising a disc having a radius greater than a radius of the inner circumferential wall and less than a radius of the outer circumferential wall, as set forth in the claims.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pinvidic et al (US 6,157,455), Wahlbrink (US 5,925,881), Wong (US 5,834,777), Sweet (US 5,488,227), Wong (US 5,341,214), Wong (US 5,340,986),

Wong (US 5,222,389), Wong (US 5,103,096), Adrian (US 4,190,363), and Osawa (JP 4-104040) all teach gas sensors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jared J. Fureman whose telephone number is (703) 305-0424. The examiner can normally be reached on 7:00 am - 4:30 PM M-T, and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee can be reached on (703) 305-3503. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Jared J. Fureman
Jared J. Fureman
July 26, 2002